



FAA-E-2519a
December 8, 1972

SUPERSEDING
FAA-E-2519, 2/2/72

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION SPECIFICATION

TYPES I AND II

1. SCOPE AND CLASSIFICATION

1.1 Scope - The equipment defined herein consists of two different types of antenna mast structures with associated base plate, top coupling mast and frangible base coupling.

1.2 Classification - Two types of masts, two types of base plates, a top coupling and a frangible base coupling.

Type I	Antenna Mast for V-Ring Antenna
Type II	Monitor Mast for Monitor Antenna

2. APPLICABLE DOCUMENTS

2.1 FAA Documents - The following FAA specifications and standards, of the issues specified in invitations for bids or requests for proposals, form a part of this specification and are applicable except as modified herein.

2.1.1 FAA Specifications

FAA-G-2100/1	Electronic Equipment, General Requirements; Part 1, Basic Requirements for all Equipments
FAA-G-2100 Sup. -4	Electronic Equipment, General Requirements FAA List of Applicable Documents
FAA-E-2186b	Antenna Array, Localizer, V-Ring
FAA-E-2158b	Localizer Monitor Dipole Antenna

2.1.2 FAA Standards -

FAA-STD-003

Paint Systems for Structures

FAA-STD-013a

Quality Control Program Requirements

(Copies of these specifications, and other applicable FAA standards and drawings, may be obtained from Federal Aviation Administration, Washington, D. C. 20591, ATTN: Contracting Officer. Request should fully identify material desired, i.e., specification numbers, dates, amendment numbers, complete drawing numbers; also the request should identify the invitation for bids, request for proposals, or the contract involved or other use to be made of the requested material.)

2.2 Military specifications - The following Military specification of the issue in effect on the date of the invitation for bids or request for proposals, forms a part of this specification and is applicable to the extent specified herein.

MIL-E-17555

Electronic and Electrical Equipment,
and Associated Repair Parts, Preparation
for Delivery of

(Information on obtaining copies of Military specifications is given in FAA-G-2100, Supplement 4 FAA List of Applicable Documents.)

2.3 Federal Standard and Specification - The following Federal Standard, of the issue in effect on the date of invitation for bids or request for proposals, forms a part of this specification:

Fed. Std, No. 595

Colors

QQ-A-591d

Aluminum Alloy Die Castings

QQ-A-601d

Aluminum Alloy Castings

(Information on obtaining copies of Federal Standards is given in FAA-G-2100, Supplement 4, FAA List of Applicable Documents.)

3. REQUIREMENTS

3.1 Equipment to be furnished by the contractor - Each equipment furnished by the contractor shall be complete in accordance with all specification requirements.

3.2 General Functional Requirements - The equipment specified herein shall function as a support for the localizer V-ring Antenna (Type I) and as a support for Localizer Monitor Antenna (Type II).

3.3 Ambient Conditions - The ambient conditions shall be those of Environment III (1-3.2.23, FAA-G-2100/1) and shall additionally include rain, sleet and snow.

-3-

3.4 Mechanical Design - The equipment specified herein shall be capable of meeting the following requirements with either the V-ring or monitor antenna mounted on the mast:

- (a) The top coupler and base coupler shall be bonded to the mast; with the top coupler oriented to the base coupler as depicted in Figure 5 for V-ring Antenna and Figure 6 for the monitor antenna.
- (b) The base coupler shall fasten to the base plate with the use of corrosion resistant hardware. Hardware is to be furnished under this specification.
- (c) The antenna mast structure must be electrically conductive to provide grounding for the antenna. The total resistance shall be less than 1 ohm when the mast structure is fully assembled.

3.5 Antenna Mast Structure - The antenna mast structures shall be of two types as stated in paragraph 1.2. These structures shall be frangible and designed to replace the existing structures described in paragraph 3.12 and 3.15.1 of FAA Specification FAA-E-2186b and to accommodate mounting the V-ring antenna masthead described in paragraph 3.11 of FAA Specification FAA-E-2186b.

Each structure shall consist of an Antenna Top Coupler, a mast, frangible base coupler and a base plate. Contractor's proposed method for connecting couplings to mast shall be subject to prior agency approval before proceeding with placement of procurement action for the material involved.

3.5.1 Antenna Top Coupler - (Figure 1) The top coupler shall be an adapter section between the 2.5 inch mast and the 4 inch square base of the V-ring antenna. Refer to Figure 12 FAA Specification FAA-E-2186b. This coupler shall be constructed from aluminum casting. The overall length of the coupler is 8 3/4 inches. The coupler shall have four vent holes, such that rain or snow cannot enter the coupler through these openings. The inside collar edge shall be smooth. The top coupler shall be made of aluminum Alloy #13 as specified in Federal Specification QQ-A-591d, or Aluminum Alloy A-43 or 356 as specified in Federal Specification QQ-A-601d.

3.5.2 Mast - The mast shall be a length of 2½ inch outside diameter aluminum pipe with a 1/8 inch wall thickness. The tube shall be made from 6061-T6 aluminum alloy. Length of Type I and Type II mast shall be of such length to conform to the overall mast structure length as shown in figure 5 for the Type I and in figure 6 for the Type II. This mast is to be inserted into the base coupler on one end and the antenna top coupler on the other end.

3.5.3 Base Coupler - (Figure 2) The base coupler, incorporates the frangible V notch. The coupler is constructed from aluminum casting. A 60 degree V notch shall be machined into the coupler using a 1/16 inch diameter round root tool, prior to the attachment to the mast. The material used shall be aluminum Alloy #13 as specified in Federal Specification QQ-A-591d, or Aluminum Alloy A-43 or 356 specified in Federal Specification QQ-A-601d.

3.5.4 Base Plate - The base plate shall be fabricated from not less than $\frac{1}{4}$ inch sheet of steel. Stiffeners are to be tack welded on the top and bottom of the base plate for the Type I (Figure 3) mast structure. There shall be no less than 5 tack welds on each stiffener. The Type II (Figure 4) mast base plate shall have a means for rotational adjustment. The axis of the base shall be adjustable to two positions: (1) an angle of 73° CW; (2) an angle of 73° CCW from the centerline on the base structure. The range of adjustment of each position shall be $\pm 15^\circ$ from the 73° angle. The Type I base plate dimensions are 14"x14"x $\frac{1}{2}$ ". The Type II base plate dimensions are 8"x 8" x $\frac{1}{2}$ ".

3.6 Mechanical Tolerances - Mechanical dimensions specified are design center values. Manufacturing tolerances shall be $\pm 1/32$ inch except where otherwise specified. The centerline of antenna mast structure shall be perpendicular to the base plate to within $\pm 1/32$ inch. This measurement shall be taken from the assembled mast assembly opposite the base.

3.7 Finish - All exterior surfaces shall be furnished in accordance with FAA-STD-003(replaces 1-3.8.2 of FAA-G-2100/1). The finish coat shall be colored aviation surface orange, color No. 12197 of Federal Std. 595.

3.8 Nameplate - The nameplate furnished shall be in accordance with 1-3.13 of FAA-G-2100/1 and shall be mounted on the mast.

3.8.1 Nameplate information - The equipment title shall be LOCALIZER MONITOR ANTENNA MAST FOR TYPE II and LOCALIZER ANTENNA MAST FOR TYPE I.

4. QUALITY ASSURANCE PROVISIONS

4.1 General - The contractor shall be responsible for conducting all inspection and testing to assure product conformance with the requirements of this specification and shall utilize, for this purpose, a quality control program in accordance with FAA-STD-013.

4.2 Design Qualification Tests -

4.2.1 Normal Test Conditions - The following design qualification test shall be made under normal test conditions.

<u>Test</u>	<u>Paragraph</u>
Conductivity	3.4(c)

-5-

4.3 Type Test -

4.3.1 Normal Test Conditions - The following type tests shall be made under normal test conditions.

<u>Test</u>	<u>Paragraph</u>
Mechanical Tolerances	3.6
Conductivity	3.4.c

4.4 Contractors Preliminary Test - A test shall be made on the Type I mast structure to verify the frangibility aspects of the contractor furnished antenna masts.

<u>Test</u>	<u>Criteria</u>
Frangibility	Energy absorption of at least 20 ft lbs and not more than 30 ft-lbs of energy from an impact load applied at a point 52 inches from the frangible cut.

5. PREPARATION FOR DELIVERY

5.1 General - Unless other wise specified in the contract, the equipment shall be prepared for domestic shipment in accordance with the following subparagraphs.

5.2 Packaging - Packaging shall be in accordance with Specification MIL-E-17555, Level C. Method III.

5.3 Packing - Packing shall be in accordance with Specification MIL-E-17555, Level B. No more than fifteen(15) Type I and two(2) Type II Antenna Masts and Associated Items shall be packed in each shipping container.

5.4 Marking - Each package and each shipping container shall be durably and legibly marked with the following information:

Name of Item and FA Type Designation
 Serial Number(s)
 Quantity
 Contract Number
 Federal Stock Number
 Gross Weight of Container
 Manufacturer's Name

6. NOTES

6.1 None.

* * * * *

For Figures 1-6 See Pages 6 through 11

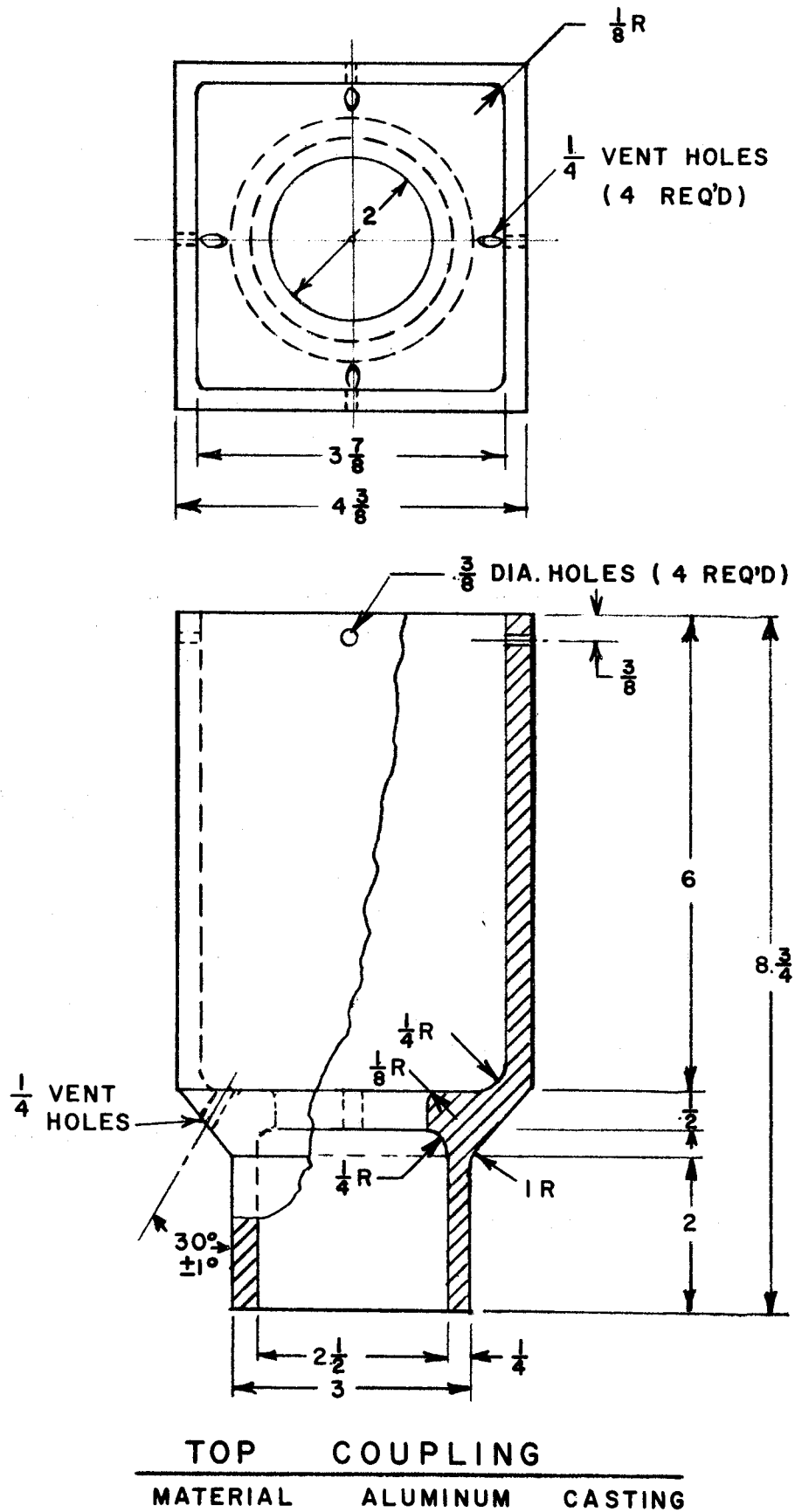
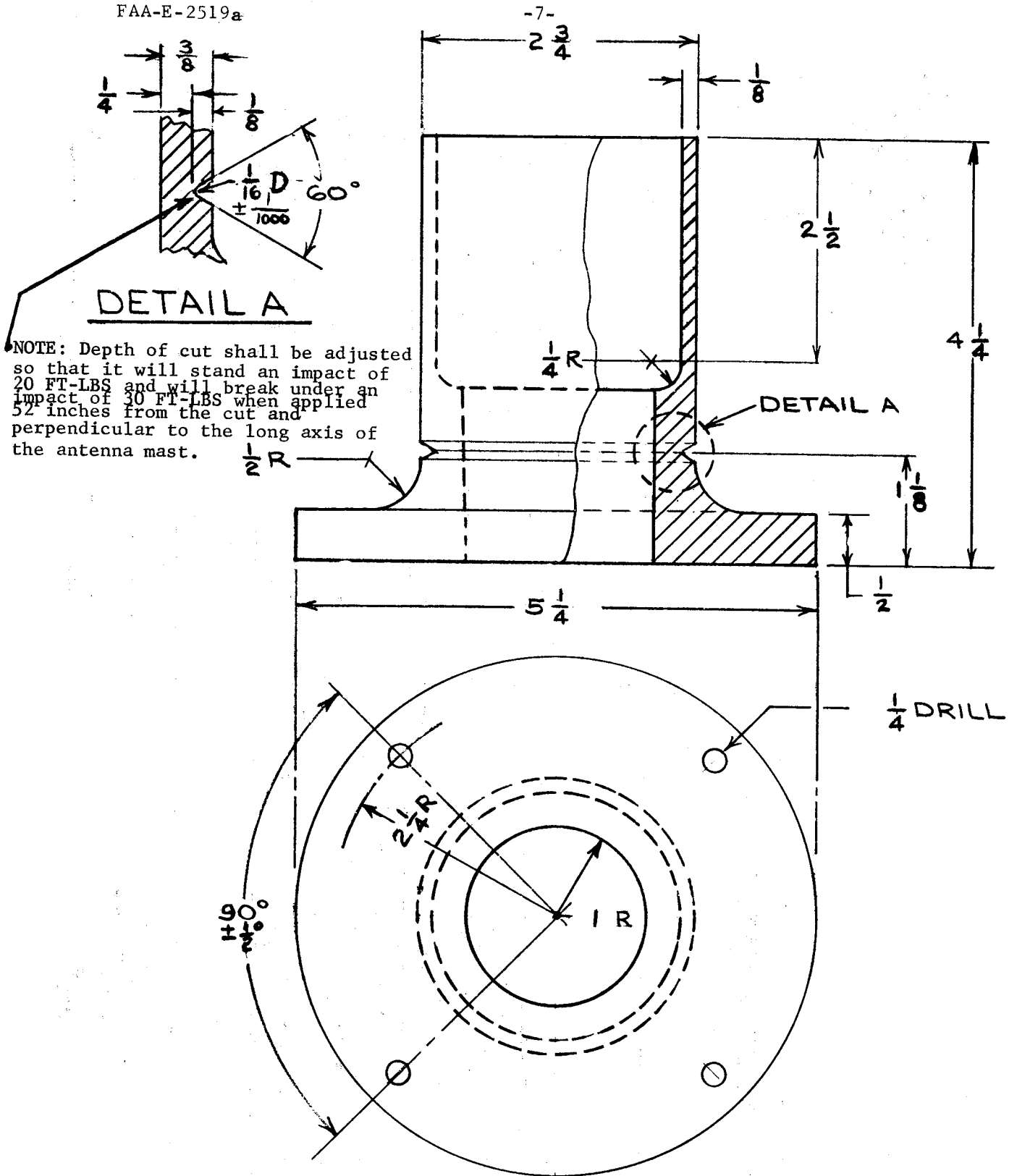


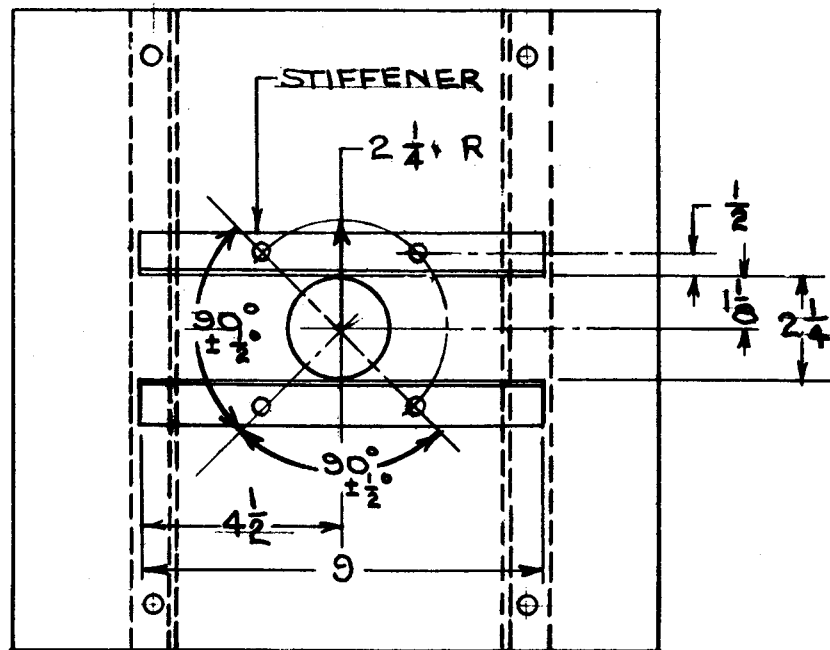
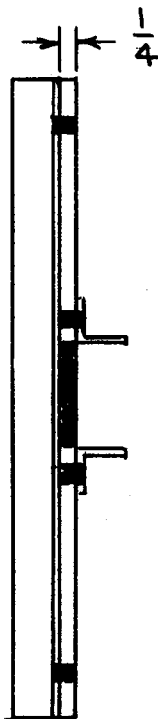
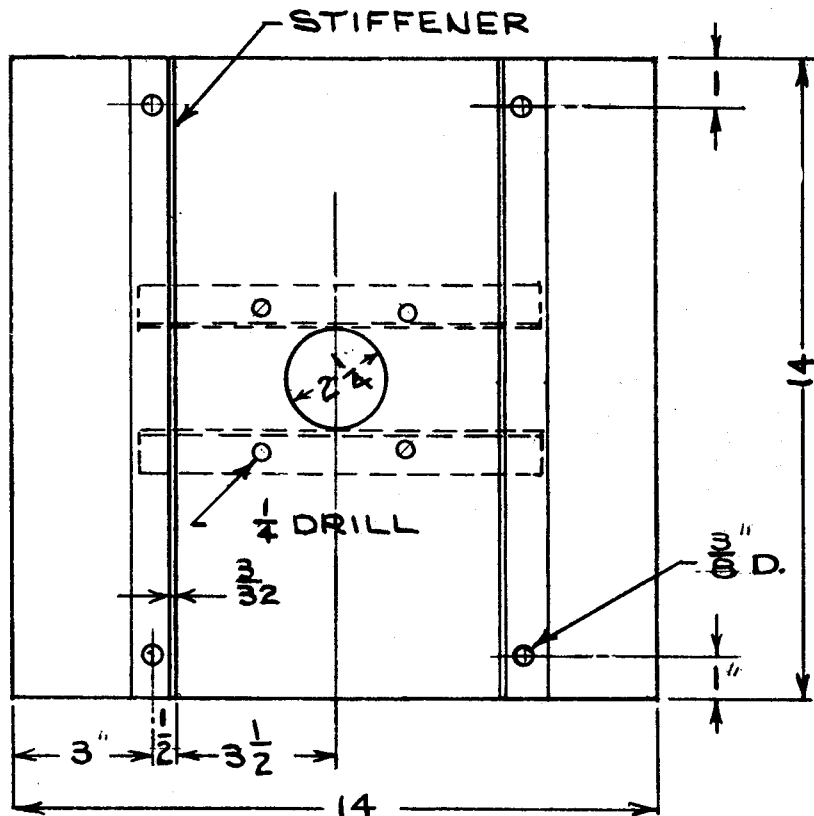
FIGURE 1



BASE COUPLING
MATERIAL: ALUMINUM CASTING

FIGURE 2

MATERIAL:
 BASE- $\frac{1}{4}$ " STEEL
 SHEET.
 STIFFENER-1"x1"x $\frac{1}{4}$ "
 STANDARD ANGLE.
 STIFFENERS TO BE
 TACK WELDED AT
 A MINIMUM OF 5
 POINTS

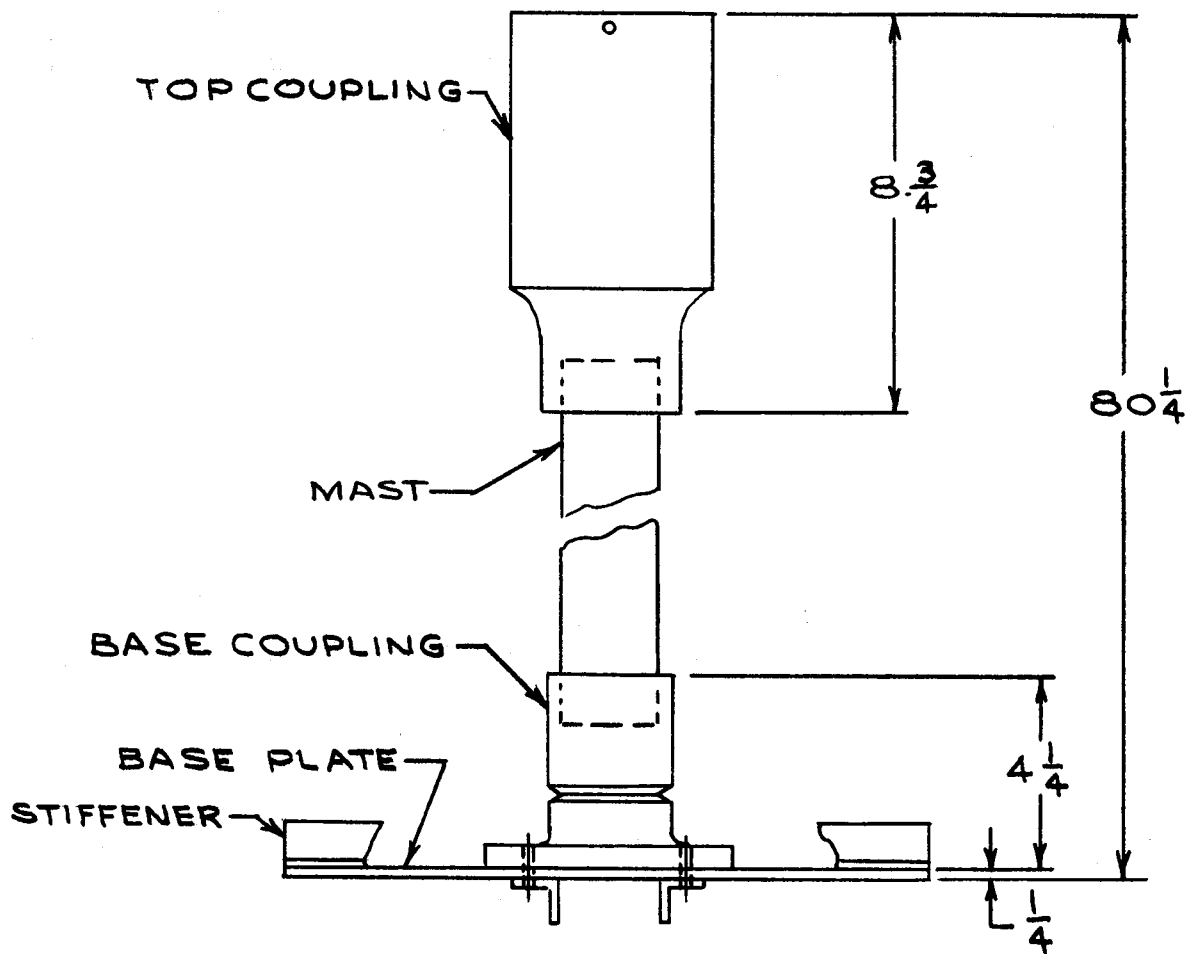
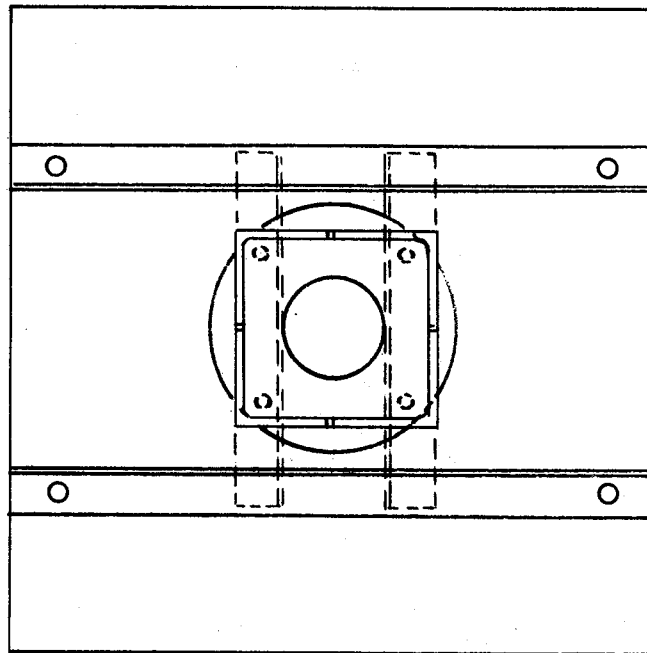


SIDE VIEW

BOTTOM VIEW

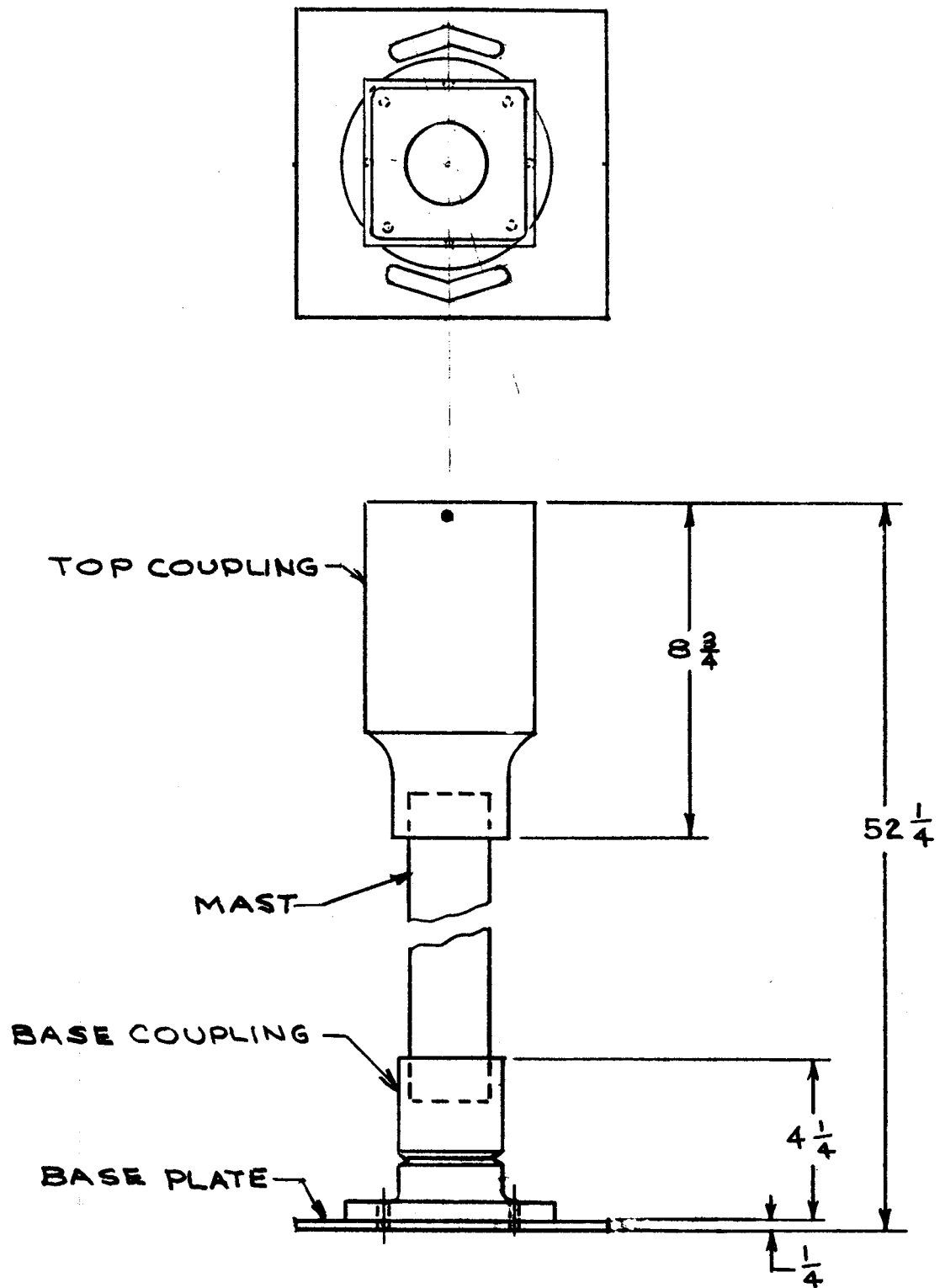
BASE PLATE TYPE I

FIGURE 3



MAST STRUCTURE TYPE I

FIGURE 5



MAST STRUCTURE TYPE II

FIGURE 6

